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ABSTRACT

The increasing magnitude of the enterprise of education, the rapid growth of knowledge, the changing educational administrative requirements and challenges, and the development of new educational programs to match the range of students' diverse interests and capacities--all these challenges call for rapid upgrading of the quality and technique of academic planning and management in higher education. These challenges are evident in the need for adequate and suitable resources and their effective use. This paper deals with generic academic planning constructs. The effort is to develop a conceptual framework within which relationships of a college's academic operations can be viewed as a coherent system. The need for the development of a holistic approach becomes evident as one observes how college academic planning and management have met the problems of growth with improvised decisions based on inadequate information. The generic academic planning constructs are only variables to be considered in the enterprise of academic planning. The emphasis is that planning for an existing enterprise is definitely a process not of creation but of identifying and articulating that which exists and then molding those dimensions into a well understood and directed whole. (Author/MJM)

Research Profile

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SYSTEMS ANALYSIS APPROACH TO ACADEMIC PLANNING PART III

By Joel O. Nwagbaraocha

This is the last part in a series of three articles on Systems Analysis Approach to Academic Planning. These three papers express the need for a logical analysis of the institutional academic structure that emphasizes the systematic application of the elements of efficiency and effectiveness in academic planning. All three parts underscore the point that systems analysis furnishes the general philosophical basis for the educational planning technique of an institution of higher learning.

Part I

The primary objective of part I, which was published in December 1973, was to introduce systems analysis approach to academic planning to curriculum and academic planners at our institutions. Parameters of systems analysis approach to academic development were succinctly defined. Effort was made to draw upon the basic construct of systems analysis in developing several frameworks for solving problems of academic planning and curriculum analysis. Concepts relevant to, and the benefits to be gained by using a "systems" model in thinking about academic planning in general and curriculum development in particular were included. Attempt was made to show how the "systems" approach provides key tools for a diagnosis of the academic structure in a college or university.

Part II

Part II, published in January 1974, dealt with a compendious analysis of degrees offered at 87 colleges/universities with a Black heritage and a summary of the occupational outlook for college graduates in the 70's. This paper emphasized the correlation of degrees offered by these institutions to jobs available, employment records, and projections of future employment as well as admission requirements into graduate/professional schools. Such an emphasis was based on undisputed predictions about manpower needs and labor trends, and it stressed the urgency of motivating students who matriculate at colleges/universities with a Black heritage to take advantage of emerging opportunities.

Part III

The increasing magnitude of the enterprise of education, the rapid growth of knowledge, the changing educational administrative requirements and challenges, and the development of new educational programs to match the range of students' diverse interests and capacities: all these challenges call for rapid upgrading of the quality and technique of academic planning and management in higher education. These challenges are evident in the need for adequate and suitable resources and their effective use. These challenges are indicated particularly in the suitable delegation and exercise of responsibilities of academic planning itself especially in relation to objectives, philosophies, plans, programs, resources, operations, and evaluation of institutions of higher learning.

Great pressures are being brought on all colleges and universities through social policies, institutional objectives, and the economics of higher education. However, in addition to these pressures, colleges and universities with a Black heritage have unique problems. The federal and state policies, the ongoing technological changes, and the social issues of the past decade culminating in the Pratt decision are having great effect on colleges and universities with a Black heritage. The above pressures have jolted these institutions to look again at their goals, their premises, and their priorities. These developments have made the black colleges appreciate more the strength of their own resources and have placed new responsibilities on them. Nevertheless, these developments have also enabled these institutions to reflect on the nature and extent of their shortcomings and to begin serious efforts at improvement, modification, and reassessment. These challenges and pressures prompted the writing of these three papers on systems analysis approach to academic planning.

Introduction

This last part in the series of three parts on systems analysis approach to academic planning, deals with generic academic

planning constructs. The effort here is to develop a conceptual framework within which relationships of a college's academic operations can be viewed as a coherent system. The need for the development of a holistic approach becomes evident as one observes how college academic planning and management have met the problems of growth with improvised decision based on inadequate information. Systems approach to academic planning provides an approach whereby key college academic problems can be stated in a form appropriate for mathematical analysis. These computational techniques allow a college system to be viewed as a set of inter-related activities that can be linked coherently to attain a pre-established set of objectives. Moreover, systems analysis of all academic programs in an institution provides the backup for a selective process.

This paper presumes that every institution of higher education has the academic plan and an academic management procedure, whether or not they are articulated or simply perceived. There is no doubt that each institution is moving in some academic direction with overall academic goals and with both general and specific academic objectives. The generic academic planning constructs delinated here may be familiar to most people. However, these constructs are only variables to be considered in the enterprise of academic planning. The emphasis here is that planning for an existing enterprise is definitely a process, not of creation, but of *identifying and articulating that which exists* and then molding those dimensions into a well understood and directed whole.

Little change of any significance in undergraduate education is likely to occur without initiative, consent, and cooperation of students and faculty. That the basic judgment on matters of academic policy at departmental divisional levels is the professional right and responsibility of faculty members is well established by tradition and practice at all institutions of higher learning. Since the faculty plays a crucial role in determining what will be in the academic programs, it is important to consider faculty management, administration, organization, and development in academic planning.

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A college structure is subdivided into administrative areas and academic departments that typically concentrate on inputs (students), libraries, media content, student union facilities, and institutional research expenditures; these are often treated as ends in themselves with little examination as to how these inputs serve the institution's purpose. Conscious output orientation, with as much quantitative backup as possible, points in the right direction. It forces academic departments/divisions to shift attention from their pursued objectives and to explain the goals they serve rather than the functions they perform.

Academic departments function effectively as academic administrative units. They recruit, appoint, evaluate, and reward faculty. They define and assume responsibility for education in particular areas. They are convenient mechanisms for requesting and allocating funds. They are an important academic and psychological base for support for faculty and students. On the other hand, the departmental structure and influence have encouraged excessive specialization, parochialism, and an unhealthy emphasis on serving majors—frequently with only minimal attention to the needs and interest of the general student and the institution as a whole.

In the existing structure of higher education, a basic dichotomy seems to exist between college administrators and faculty relating to the existence or non-existence of academic programs. College administrators have no formal veto power to institute academic programs. On the other hand, the faculty has no power to finance curriculum, while the administration, if it chooses, can destroy a curriculum by withholding or decreasing budget. Such a dichotomy points at cooperative participation in policy-making at the college and departmental levels. (See Part I—Participatory Planning)

The Use of Management Systems in Making and Evaluating Goals and Objectives in an Academic Setting

It seems that the continuation of external support necessary for the survival of any institution of higher learning may depend on the realistic articulation of its mission, goals, and objectives. Such articulation must be made in ways that are meaningful and could be translated into realistic programmatic constructs. A commonly used approach for stating institutional mission, goals, and objectives is the Delphi technique.

Clearly articulated mission and goals of an institution will serve as the basic element in the formulation of the institution's philosophy, idealogy, and policies. Such stated goals and objectives help in tying together assumptions, values, and hopes for the institution into a coherent policy that then provides standards and guides for present and future decisions and actions. An institutional policy formulation containing clearly enunciated goals also enables individuals, federal and state agencies, private funding agencies, and others outside the institution to be clear about the institutions *raison d'etre* and what is expected of it.

Before an institution can set its educational goals, it must first determine *who* has primary responsibility for *what*. In an effort to carry out institutional analysis beginning with goal setting and statement of objectives, it should be preceded by a dialogue between instructional personnel who design the curriculum, financial administrators who devise the pattern of support, institutional operations analysts who quantify both instructional and financial elements, and skeptics (within the institution) who believe that the problems of education are not amenable to operations analysis.

Robert E. Lahti (1973) states that what is needed in establishing institutional goals and objectives is an understanding of the crucial relationships of goals on the one

resource availability can be associated with each task to give management a basis for a choice of schedule and to monitor the project.

Planning-Programming-Budgeting System (PPBS). This provides a method for determining the costs of program goals and objective. There is a lot of literature on PPBS and its application to educational planning.

Operations Research (OR). This enables an institution to anaiyze and evaluate the proposed means for implementing goals and objectives before real action is taken.

Need For an Evaluative Construct

Unless an institution has built into its basic programs and activities self-healing corrective feedback system(s) and a built-in audit for assessing terminal results, then the institution is like a jet plane without radar. The institution cannot see the obstacles surrounding it nor is the course steady and true. By regular feedback, minor course corrections can be achieved. To wait until the end of a project before making an assessment may be too late to correct what otherwise might have been a successful choice of solutions. There must be frequent feedback of results both vertically and laterally. There also must be more formal assessments of progress made toward goals and objectives.

As Figure II shows, the system of evaluation by objective is a cycle. Such an approach is self explanatory. There are three advantages to such an evaluative construct:

- It helps an institution in setting measurable goals and objectives at the beginning of a major project(s)
- It helps in establishing joint objectives of all components within an institution that relate to a given project(s)
- It helps in quarterly and annual reviews of progress toward achieving objectives of the project(s).

In solving an institution's problems, there is a need to focus on relationships and to see the institution as a whole, to focus on outputs as a ratio to inputs. As a result, goals and objectives must be set and implemented. The accomplishment of this calls for a systems approach which implies an orderly approach for solving institutional problems. In other words, there is a need for a structured process based on a study of all the variables related to a given problem or project. It must be stated that change and innovation are not goals. They are means for achieving goals.

Richard W. Hostrop (1973) lists seven sequential steps which are embodied in a systematic goal determination and implementation strategy:

- Diagnosing the problem
- Formulating goals and objectives
- Identifying constraints and needed resources
- Evaluating alternatives
- Selecting solutions
- Implementing the selected solution
- Feedback and evaluation

Specific Applications To Academic Planning

Dimensions of Academic Planning

Palola and Padgett (1971) identified eight dimensions of institutional planning. These eight basic dimensions of planning could be considered in the systems analysis approach.

The first is the consideration of the scope of the academic plan. Does it involve ends-oriented planning (educational objectives and purposes) or does it involve means-oriented planning (projection of enrollments and existing programs to determine budgetary, staff, and facilities needed) or does it consider both? In a combination of end-oriented and means-oriented planning, all major academic policies are examined and determined with regard to academic institutional functions and activities. These include: institutional mission and role, programs, curricula, methods and forms of instruction; recruitment, selection, promotion and general welfare of the faculty; admissions criteria, academic standards and student affairs; and finances and facilities. Such a process generally occurs in a series of phases rather than a single effort to simultaneously examine all areas.

The second dimension is the integration of all the institutional plans, recognizing the interrelatedness of decisions regarding academic, facilities, and budgetary issues. Academic long-range plans and other institutional plans and related programs, and facilities and finances are closely interrelated and mutually supportive.

The third dimension of academic planning is one with priorities specifically ranking the importance of its goals. This necessitates institutional mission and role to be defined so that the special competencies and inadequacies are identified, and priorities are established among the goals of the institution. A systematic effort can be made to map out major programs of cooperation with other institutions so as to minimize unnecessary dilution of resources.

The style of academic planning is the fourth dimension. Continuous planning recognizes that the process is a never-ending adaptation to new conditions and commitments. On the other hand, periodic planning occurs sporadically and is generally a reaction to crisis situations or demands from foundations, accrediting agencies, or the Office of Education. Academic planning should be seen as a key process for academic analysis and improvement.

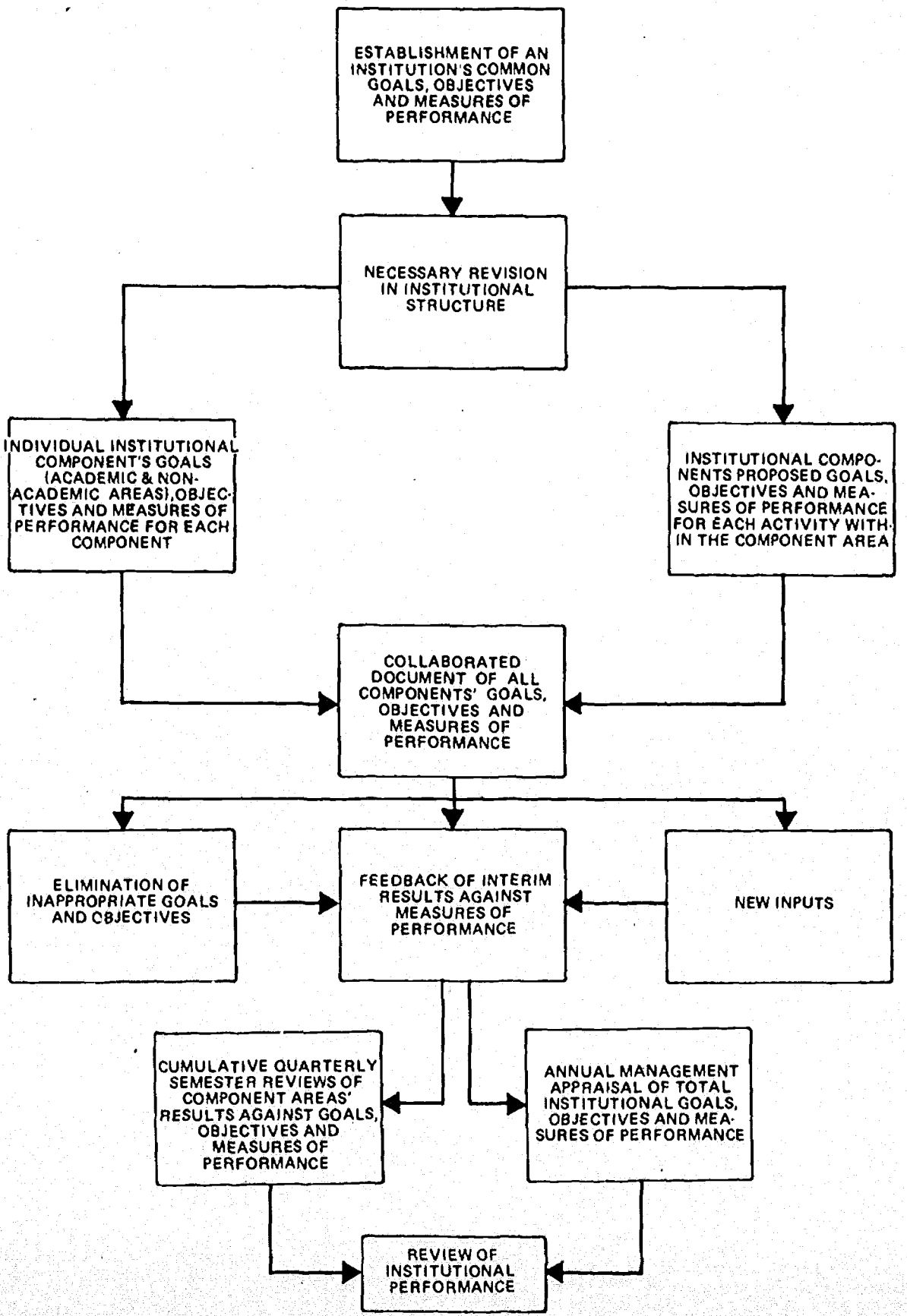

Figure II. The Cycle of Evaluation by Objective

hand, desired outcome on the other, and the various activities necessary to move from one to the other so that making judgments about goals and assessing activities and resources will be translated into results.

There are various constraints which must be considered in institutional goal setting. The following are management problems that must be dealt with in achieving institutional effectiveness.

- Integration of individual needs and institutional needs.
- Consideration of power and distribution of power. The traditional, bureaucratic pyramid of power is no longer effective in a climate of technological and educational diversification. Power distribution must move from a completely autocratic to a more democratic basis for the greater utilization of vital human resources.
- Consideration of effective management and resolution of conflicts. A good example is the internal dominance conflicts between faculty and administration.
- Institutional adaptation to a changing and turbulent environment. For example, the managerial molding of a college or university must strive for institutional adaptation required by the involvement of the government through legislative and judicial policies.
- Maintenance of institutional identity.
- Periodic institutional revitalization to avoid decay and to promote growth.
- Determination of how goals and priorities are to be made by committee, by survey, or both.

Since learning is the single common product of every dimension and level of education, every goal and objective, every deliberation of institutional management should have as its first dimension learning results. This implies that every act, every decision, every goal and objective, every policy must consider learning as an end product.

Always, the educational enterprise must be concerned for the quality of the learning environment, the values of research programs, the growth and development of both academic and non-academic personnel, and the holding forth of incentives to creativity. The focus of attention must be institutional achievement, and the key to such achievement is management. Therefore, the management of institutions of higher learning must seek to understand how institutional objectives and goals are best determined and modified, how policies consistent with objectives are chosen and implemented, how performance under policy is best achieved, and how evaluation of that performance in turn will permit reassessment of objectives and policies.

Institutional Data Gathering via Management Information Systems (MIS)

Harry J. Hartley (1968) stated that the design of an integrated MIS system consists of molding together a pattern of instructional-administrative activities and automated processes into a harmonious, efficient working arrangement. With the installation of an information exchange procedure, the system requirements should become more easily determined by means of analysis of existing institutional data and processes. Data processing is an important component of a management information system, particularly if it is related to a data base through which information is received, secured, accounted for, converted, and retrieved. The data base (or data bank or unit record center) for an institution can be installed or expanded over the years after the following basic system components have been provided:

- Data collection devices and processing procedures
- Planning-Programming-Budgeting System (PPBS) procedures and skilled personnel
- Utilization and documentation procedures
- Computer simulation models and computer programs

It is dangerous to plan any proposed MIS system around a particular hardware or machinery because doing so may involve a number of changes that do not move the systems analysis approach closer to program objectives. A management information system can be developed around a program budget structure in order to provide data for progress reporting and program planning and control.

Figure 1 illustrates a framework for academic information gathering and storage. For a more accurate projection of student population in an institution, information must be gathered to assist colleges in the forecasting of the population of an institution, especially future freshmen on the basis of participation from community/junior colleges and area high schools, as well as from other parts of the state and country. Secondly, data and general information are needed in calculating the instructional and non-instructional work loads for students and faculty at each academic department of the institution. The projected student population will undoubtedly help in calculating the number and cost of faculty required in future years. Information and data are also needed regarding required facilities. This calls for an accurate calculation of the future requirements of teaching and non-teaching facilities and space. There is a need for general information on operating cost of all academic expenditures. This implies calculation of total revenue and expenditure for each of the years covered by the planning period, to allocate direct and indirect costs to courses, degree, and discipline programs, and to calculate cost of producing one degree. Finally, calculation must be made on the capital revenues and expenditures for each of the years covered by the planning period.

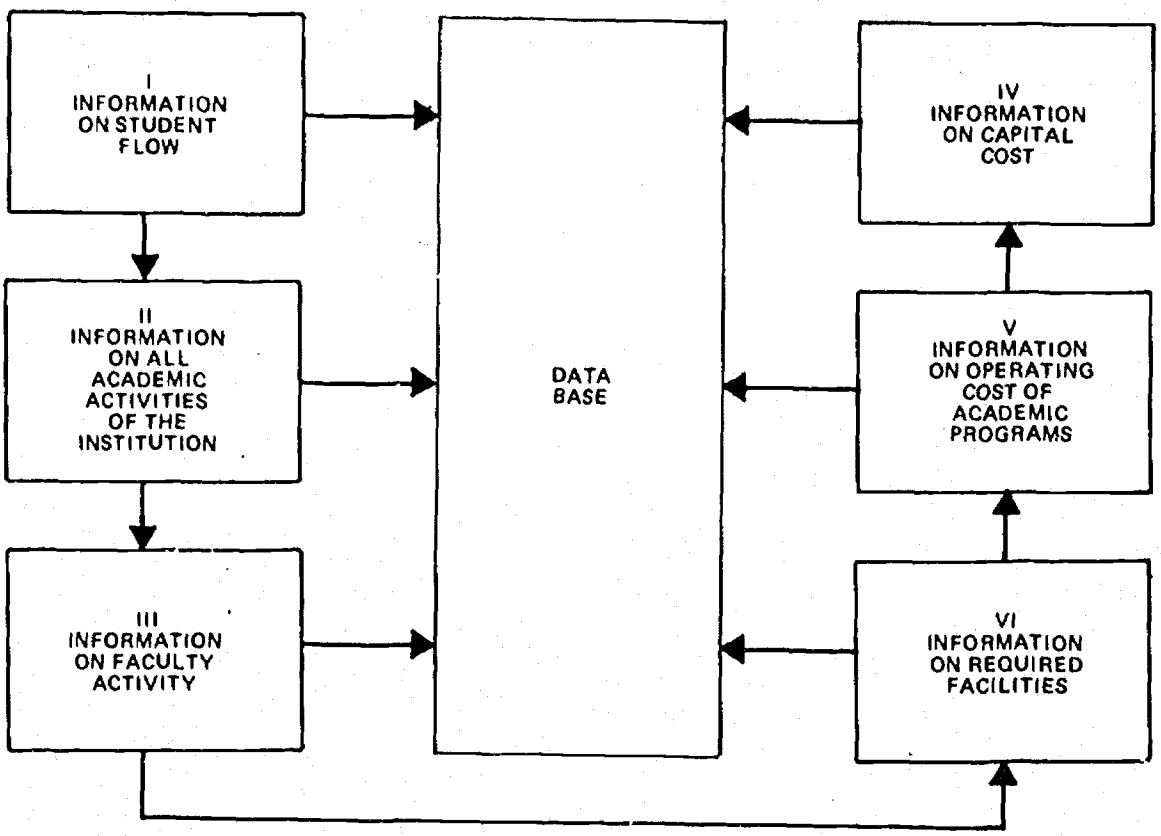

Figure I. Conceptual Framework of Academic Planning—Data Requirements

Current Management Theories and Techniques

The proven value of management principles in the economic sector of society and the growing number of successful examples in the educational sector indicate great merit in management principles. As a consequence, a few effective and efficient business and industrial management practices which are applicable to education are mentioned below. It should be noted, however, that the application of management principles to education requires a systems approach. If an educational system, as a system, shares in common with other systems (the human body, the military, business, etc.) a set of inputs which are subject to a process designed to attain certain outputs, which are intended to satisfy the system's objectives and goals, then it is necessary to employ management principles in the enterprise of education.

Proven management techniques and systems cannot be ignored by educational managers. Although implementation in and application to an educational setting may require translation and modification, these techniques may well demonstrate new approaches to old educational problems. Management techniques are intended not as an assault on the approaches used in the past but rather as a means of meeting the obvious evidence that old methods are no longer effective.

Richard W. Hostrop (1973) describes several management processes and techniques that extend or are compatible with the systems approach to educational planning:

Delphi Technique. This is a method of assessing group opinions by individuals through responses to a series of successive questionnaires, rather than through a series of group meetings. This approach provides an institution with a more objective means to assess the range of ideals about goals and objectives, gives priority ranking to these goals and objectives, and establishes the degree of consensus about the goals and objectives.

Program Evaluation Review Technique (PERT). PERT assists in implementing the goals and objectives set by an institution. This is an event-oriented network representation of the time and duration of tasks of a project. PERT uses three time estimates for each task--optimistic (o), pessimistic (p), and most probable (m); te is the expected elapsed time. The probability of meeting scheduled dates for various activities can then be calculated to assist management in evaluating status with the formula:

$$te = \frac{o + 4m + p}{6}$$

Critical Path Method (CPM). This is generally used in combination with PERT. CPM is an activity-oriented network representation of the relationship and duration of tasks of an entire institutional project. The longest path, in terms of time, through the project is known as the critical path. Each task on this path must be completed within the time alloted in order for the project to be completed on time. Tasks not on this path can have extra time for completion. Cost and

The fifth dimension is research and its attempt to assess the degree to which academic planning decisions are based on accurate data regarding the relevant aspects of the academic programs of the institution. There must be a continuous process of research which focuses on the key academic issues facing the institution and goes beyond the routine service of institutional research offices. Various efforts must be made, not only to better describe student, faculty, and the teaching-learning process, but also to assess the overall effectiveness of the institution.

The sixth dimension is the organizational mechanism for academic planning. Some institutions use an existing structure such as a curriculum or academic policy committee, while other institutions make special arrangements such as long-range academic planning committee solely devoted to this concern. No matter what organizational mechanism an institution prefers, it is imperative that students, faculty, and administrators be on joint academic committees which facilitate communication and coordination, and equitably distribute authority.

The level of participation in academic planning is light when it involves only a limited number of faculty, and involves them primarily on a reactive basis. The seventh dimension is therefore, the degree of participation. Faculty, students, administrators and trustees all have responsibility for academic planning. Each group has a unique perspective, type of expertise, and particular contribution to make toward academic planning. Effective academic planning involves both initiator and reactor roles played by the various groups. Special incentives, released-time, and staff funds increase the quality of such participation.

The last dimension to be considered is the process of academic planning. Academic planning requires a special and ongoing structure to provide an institutional perspective and to focus on generic issues facing the institution.

Key Elements of a Comprehensive Long-Range Institutional Academic Plan

The directive function of systems analysis seeks to emphasize the importance of forward-looking plans based on cooperative effort of faculty, administration, students, board, and all other personnel. It seeks to identify the key elements of a comprehensive long-range institutional academic plan. For an institution that seeks academic development through deliberate choice, awareness of the scope and nature of its academic policies, the implications for academic programs, and the selection of alternative possibilities is an imperative of systems analysis. An outline analysis of an institutional academic policy in the common areas is presented here.

I. Faculty/Staff Organization and Development

1. Common goals, objectives, and measures of performance of faculty/staff.
2. Faculty organizational chart (This must include faculty rank and compensation structure).
3. Academic management and administration structure.
4. In-service training programs: workshops, retreats, and seminars for faculty and staff.
5. A college-wide policy and guidelines governing sabbatical leaves, faculty release-time, doctoral and post-doctoral study, and research grants.
6. Faculty standards based on the stipulations and recommendations of accrediting and professional agencies.
7. College faculty salary policy (including group insurance, retirement, and professional travels).
8. A comprehensive college policy on faculty promotions.
9. College policy on faculty responsibility for office hours and meeting scheduled classes. This policy must include faculty load-distribution and average load.

II. Academic Divisions

A. Governance

1. Organizational chart of academic programs, divisions, departments, or schools.
2. Characters of the academic components of the college, and operational goals and objectives of each academic area.
3. Democratic participation in departmental policy making.
4. Broad and meaningful student involvement in departmental/divisional decision-making activities.
5. College policy of electing departmental/divisional/school chairperson or dean for limited terms.
6. Departmental/divisional/school committee(s) on instructional development and for coordination of instructional services and facilities.
7. Plans for fostering, evaluating, and assisting in providing good teaching in each department.
8. Policy for systematic review of academic departments and programs.

B. Curriculum

1. Existing educational system of college and revised educational objectives of the institution.
2. Operational goals and objectives of the college emphasizing the goals in qualitative and quantitative forms.
3. Goals and behavioral objectives of each department/division (in the affective, cognitive, and psychomotor domains). (The academic program designs for each academic area must be consistent with the college's goals and objectives.)
4. Statement of institution's academic program for the public. (This must include specific statements of behavioral objectives and requirements of each academic area.)
5. Funds for research and development in curriculum and instruction.
6. A committee to devise plans for student independent study with credit.
7. Opportunities for field experiences for students and faculty via the establishment of the cooperative education programs.
8. An urban resources center with established functions. (It could serve as the link between the college and the community that is served.)

9. Specific statements from each department on the following:

(a) Course information (per term/annually)
- Course title
- Sections offered
- Enrollment of each section
- Predominant instructional strategies. (Are they appropriate?)
- Course objectives in terms of stated outcomes (behavioral objectives).
- Measurement of objective realization

(b) Estimate of instructional cost per program (basis: FTE–student cost) for direct cost calculation (PPBS)
- Number of the faculty
- Faculty rank and compensation structure
- Clerical support of the faculty
- Materials, rentable equipment, and supplies
- Full-time enrollment or FTE (present and projected)

(c) Additional departmental analyses
- Average class size in department
- Number of small classes
- Total courses offered/FTE faculty
- Department faculty rank (number and percent)
- Department tenured faculty (number and percent)
- Faculty load distribution; average load
- Average salary (per rank; high-low)

(d) Academic program evaluation
- Student program evaluation
- Faculty program evaluation
- Grades

(e) Degree program offered

III. Course-Credit Organization

1. New graduation requirements in view of the peculiar kind of students admitted for bachelor's degrees, majors, areas of concentration.
2. Required hours in curricula, majors, and minors. (Also examine and eliminate all but essential prerequisites.)
3. Alternatives to existing course-credit-hour structure.
4. Diverse types of courses–exploratory, general interest, inter- and intra- disciplinary, etc.
5. Courses and programs to meet needs of the community (special students) via evening collges.
6. Department contributions to catalogue.

IV. Honors Program

1. Purposes of honors programs: criteria for admission; possibilities for more options and flexibility.
2. Greater experimentation in honors work, and means of heightening its impact on the college community.
3. Communications system–especially to freshmen and transfer students–the benefits and opportunities of participation in honors work.
4. Greater student participation in the evaluation and decision-making processes of the honors program.
5. Relations between honors program and departments.
6. Resource needs of revised honors program.

V. Adult/Continuing Education Program

1. Offering of non-credit adult education courses; credit and non-credit courses in the immediate community; cooperative offerings with other local institutions; correspondence courses (consider use of new media and learning devices.)
2. Coordination of continuing education courses and programs with the rest of the college program, including staff, pay, load, transfer of status and areas of responsibility.
3. Flexibility and more options with existing required hours.
4. Examination of content and methods and improved communication, especially outside the college.
5. Expanding field experience for students and faculty.
6. Research on emerging occupational areas and innovative, experimental programs.

VI. Curriculum Evaluation

1. College policy on evaluation of students.
2. A systematic basis for obtaining alumni evaluation of courses and instructors.
3. A system of ascertaining student evaluations of all courses and instructors.
4. A student-operated evaluation booklet.

VII. Non-Curricular Programs (Administration)

A. Admissions

1. An admissions policy committee.
2. Size of entering freshman class for incoming school fiscal year and projection for the future.
3. Quotas for winter, spring, and summer sessions.
4. Criteria and procedures for experimental admissions and deferred admissions and plans to evaluate their impact and effectiveness.
5. Clear statement of admissions policies for the college catalogue.

B. The Transfer Student

1. Special committee to plan, organize, and hold first annual conference on transfer students.
2. List of community college course equivalences.
3. List of community colleges whose graduates would receive general studies waiver.
4. Literature for transfer students.

C. Financial Aid

1. A financial aid committee.
2. The structure and functioning of the financial aid area, aimed at creation of a central office. (This office should administer scholarships, NDSL, EOA, CWS, and student employment.)
3. An MIS for financial aid.
4. Policy for awarding special or designated scholarships.
5. Financial need for projected enrollment of the incoming fiscal year students.
6. Bulletin on all available financial aid and assistance.

D. Advising and Counseling

1. Committee on academic advising.
2. Coordinator of academic advising.
3. College-wide advising system; in-service training for academic advisors.
4. Analyze and update advising system and procedures.
5. Feasibility of computerized graduation audit, and where possible, implement computerized graduation by Fall 1974.
6. Vocational counseling with help of placement office and testing services.

E. Registration and Scheduling

1. Enrollment forecasts, student demands for classes, alternative systems of computer-assisted registration, and more effective use of resource allocations based on fundings.
2. Orientation programs.
3. A college information center.

The Role of Systems Analysis Approach to Academic Planning

The basic questions concerning academic decisions or academic policies to be answered by academic planners are generally 1) What knowledge and skill should be developed? 2) When, where, how, by whom, and for whom: In other words, in a given time period—maybe a year, what kind of education should be offered, for how many students, by how many professors and support personnel, with what background and training, and in what facilities?

In answering these questions, it is imperative to be aware of the history of the institution and its peculiar characteristics; for example, open door admission policy. It is also important to bear in mind the three general objectives of education:

- To produce an enterprising and skilled labor force that can be counted on to contribute to the economic growth, prosperity, technological advance of the nation and to enable people to hold rewarding jobs and in turn, provide the nation with economic strength;
- To provide students and perhaps parents, with the joy and satisfaction of achievement through learning.
- To preserve and enlarge the cultural heritage of the country and to strengthen its democratic institutions.

The basic point in these three papers on systems analysis approach to academic planning is than an institution of higher learning can determine its policies most effectively if it chooses rationally among alternative courses of action, with as full knowledge as possible of the implications of those alternatives. The requirement of choice is imposed on it by the fact that any college or university is limited by the scarcity of resources. An institution must chose not only among various courses of the institution's action, but also between its total program. The primary purpose of the systems analysis approach is to facilitate the making of difficult academic choices (decisions). Systems analysis is the focus of the process of comparison and coordination. Disciplined, orderly thought is the characterization given to systems analysis, but disciplined, orderly thought suggests certain traits: reflectiveness, self-criticism, and the willingness to reconsider past commitments without self-justification. Systems analysis could be regarded as quantified common sense or a mechanism for sharpening the intuition of the decision makers. It is simply a method of investigating rather than solving problems.

Systems analysis approach to academic planning underscores the following:

- Appraisal and comparison of various academic division/department activities in terms of their contributions to the overall educational objectives of an institution.
- Determination of how given academic objectives can be attained with minimum expenditure of resources.
- Projection of innovative academic activities over an adequate time horizon.
- Comparison of the relative academic contributions of all academic areas of the institution.
- Revision of objectives, programs, and budget in the light of experience and changing circumstances.

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